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EXAMINER

ALLEN, CAMERON J

ART UNIT

PAPER NUMBER

1709

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/530,892

Applicant(s)

BROLIN ET AL.

Examiner

Cameron J. Allen

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1709

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-8, 10-17 and 19-21 is/are rejected.
- 7) ☒ Claim(s) 9 and 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 04/11/2005.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The indefinite elements are: The claim number that corresponds to "method according to". The examiner interprets this to mean the "method according to claim 1" for the purposes of examination .

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1,3-7,and 10-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Wiest (US 4,156,652)

Regarding claim 1, Wiest teaches a method for treating liquids comprising the steps of (Column 2 line 29): Irradiating a flow of air and a flow of the liquid to be treated at the same time in order to create ozone in both the air and the liquid (column 1 18-20) mixing the ozone-containing air with the liquid to be treated up-stream the liquid

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irradiating point, irradiating the flow of liquid containing the in-mixed ozone in order to break down the ozone in the liquid for producing free radicals (Column 1 line 53-55).

Regarding claim 3, Wiest teaches the method according to claim 1 wherein the UV radiation which is emitted for breaking down the ozone and contaminants has a wavelength of 245nm-400nm (Column 2 line 63).

Regarding claim 4, Wiest teaches the method according to claim 3, wherein the UV radiation which is emitted for breaking down the ozone has a wavelength of 254nm (Column 3 line 17).

Regarding claim 5, Wiest teaches method according to, claim 1 wherein the mixing is obtain by an ejector effect into the flow of liquid. (Column 3 line 61)

Regarding claim 6, Wiest teaches an apparatus for the treatment of liquid according to claim 1, comprising a container having an inlet and an outlet for the liquid to be treated (fig 1 8 and 11), UV generating light source capable of irradiating the inside of the container (fig 1 #4), air guidance means arranged inside the container (fig 1 channel 7), connected to an air source and an inlet conduit for the liquid to be treated via a mixing means (figure 1).

Regarding claim 7, Wiest apparatus according to claim 6 wherein said air guidance means comprises a compartment divided from the inside of the container by a quartz glass and that said UV light radiating means is arranged in or adjacent said compartment (Column 2 line 45).

Regarding claim 10, Weist teaches an apparatus according to claim 6, wherein the mixing means comprises a throttle on the inlet, which throttle is capable of creating

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an ejector effect of the air/ozone into the flow of liquid (Column 3 Line 57-61). The examiner interprets the three-way valve to be a throttle. It is well known that valves control the flow of water and allow and give the ability to adjust the amount of water flow, or throttle the water flow. The examiner interprets the introduction of the gas directly into the fluid by means of air compressor 14 in figure 1).

Regarding claim 11, Wiest teaches an apparatus for treating liquids, and in particular water, according to claim 6, further including through-flowing (chamber 1 fig 1) means provided with inlets and outlets for the liquid (fig 1 #8 and #11), UV-light generating means arranged in the through-flowing means (fig 1 #4), capable of generating ozone in the through-flowing liquid and at the same time break down the ozone in order to produce free radicals, characterized in that mountable and demountable connection means are arranged to the inlet and out of the through-flowing means (Figure 1 #15, #18, #20)).

Regarding claim 12, Wiest teaches a system according to claim 11, characterized in that it is arranged with at least two through-flowing means (Figure 1).

Regarding claim 13, Wiest teaches a system according to claim 12, characterized in that said through-flowing means are arranged in series, whereby the first through-flowing means is connected to an inlet pipe for liquid to be treated and that the last through-flowing means is connected to an outlet pipe for the treated liquid (Figure 1 8 and 11 for water and 15 and 18 for Ozone).

Regarding claim 14, Wiest teaches a system according to claim 12 characterized in that at least two of the said through flowing means are connected in parallel to an inlet pipe for the liquid to be treated and an outlet pipe for the treated liquid (Figure 1).

Regarding claim 15, Wiest teaches a system according to claim 11, characterized in that the through-flowing means is designed as an elongated pipe (fig 1 #1).

Regarding claim 16, Wiest teaches a system according to claim 15, characterized in that the UV-light generating means is arranged in one end of the elongated pipe (fig 1 #4).

3. Claims 1,5-7, and 11-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Last (US 4,141,830).

Regarding claim 1, Last teaches a method for treating liquids comprising the steps of (Column 1 line 4): Irradiating a flow of air and a flow of the liquid to be treated at the same time in order to create ozone in both the air and the liquid (Column 1, 20-27) mixing the ozone-containing air with the liquid to be treated up-stream the liquid irradiating point (column 2 line 35-37), irradiating the flow of liquid containing the in-mixed ozone in order to break down the ozone in the liquid for producing free radicals (Column 1 line 55-59).

Regarding claim 5, Last teaches method according to, wherein the mixing is obtained by an ejector effect into the flow of liquid (Column2 36-40 and Column 3 line 31).

Regarding claim 6, Last teaches an apparatus for the treatment of liquid according to claim 1, comprising a container having an inlet and an outlet for the liquid to be treated, UV generating light source capable of irradiating the inside of the container, air guidance means arranged inside the container, connected to an air source and an inlet conduit for the liquid to be treated via a mixing means (Column 1 line 46-50).

Regarding claim 7, Last teaches an apparatus according to claim 6 wherein said air guidance means comprises a compartment divided from the inside of the container by a quartz glass and that said UV light radiating means is arranged in or adjacent said compartment (Column 2 line 49-51).

Regarding claim 11, Last teaches an apparatus for treating liquids, and in particular water, according to claim 6, further including through-flowing means provided with inlets and outlets for the liquid, up-light generating means arranged in the through-flowing means, capable of generating ozone in the through-flowing liquid and at the same time break down the ozone in order to produce free radicals, characterized in that mountable and demountable connection means are arranged to the inlet and out of the through-flowing means (Figure 2).

Regarding claim 12, Last teaches a system according to claim 11, characterized in that it is arranged with at least two through-flowing means (Figure 2, 43 and 50).

Regarding claim 13, Last teaches a system according to claim 12, characterized in that said through-flowing means are arranged in series, whereby the first through-flowing means is connected to an inlet pipe for liquid to be treated and that the last

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through-flowing means is connected to an outlet pipe for the treated liquid (Figure 43 and 50)

Regarding claim 14, Last teaches a system according to claim 12 characterized in that at least two of the said through flowing means are connected in parallel to an inlet pipe for the liquid to be treated and an outlet pipe for the treated liquid (Figure 1).

Regarding claim 15, Last teaches a system according to claim 11, characterized in that the through-flowing means is designed as an elongated pipe (Figure 43 and 50) (Column 3 line 53).

Regarding claim 16, Last teaches a system according to claim 15, characterized in that the UV-light generating means is arranged in one end of the elongated pipe (Figure 46).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

Considering objective evidence present in the application indicating obviousness or nonobviousness

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 2, 8, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiest as applied to claim 1 above, and further in view of Korin (US 5,935,431).

Regarding claim 2, Wiest teaches a method according to claim 1. The reference does not teach of the further step of exposing the fluid to at least one catalyst at the same time as the ozone is broken down for increasing the amount of free radicals. Korin does teach of exposing the fluid to at least one catalyst at the same time as the ozone is broken down for increasing the amount of free radicals (Column 5 line 45-50). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiest with Korin. Both of the references teach water treatment using ultraviolet light to purify and create ozone for further purification. Korin teaches the use

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of a catalytic filter which is well known in the art. The use of filters in water treatment is well known and would have been obvious to use for further polishing of the water.

Regarding claim 8, Wiest teaches an apparatus according to claim 6 but does not teach wherein substantially the whole of the inner surface is arranged with a catalyst. The Korin reference does teach wherein substantially the whole of the inner surface is arranged with a catalyst. (figure 1 #4). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiest with Korin. Both of the references teach water treatment using ultraviolet light to purify and create ozone for further purification. Korin teaches the use of a catalytic filter which is well known in the art. The use of filters in water treatment is well known and would have been obvious to use for further polishing of the water. Korin presents the filter as substantially the whole of the inner surface is arranged with a catalyst.

Regarding claim 17, Weist teaches a system according to claim 11 but does not teach ceramics are arranged on the inside of the through-flowing means at least adjacent said UV-generating means. Korin does teach ceramics are arranged on the inside of the through-flowing means at least adjacent said UV-generating means (column 5 line 47). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiest with Korin. Both of the references teach water treatment using ultraviolet light to purify and create ozone for further purification. Korin teaches the use of a ceramic filter which is well known in the art. The use of filters in water treatment is well known and would have been obvious to use for further polishing of the water.

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7. Claims 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiest as applied to claim 1 above, and further in view of Mancil (US 5,843,309).

Regarding claims 19 –21, Wiest teaches the system according to claim 11 but does not teach a through flowing means located near an outlet for human use like a shower head, or that the means is located between a water faucet and the water outlet, or between a warm water source. Mancil does teach a through flowing means located near an outlet for human use like a shower head, or that the means is located between a water faucet and the water outlet, or between a warm water source. (Figure 2) It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiest with Mancil. Both of the references teach water treatment using ultraviolet light for purification. It is known in the art that water flowing from a faucet may need treatment. It would have been obvious to one of ordinary skill in the art at the time of the invention to know that a faucet is capable of delivering warm water.

Allowable Subject Matter

8. Claims 9, and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is an examiner's statement of reasons for allowance: The prior art does not teach the use of titanium dioxide as a catalyst.

10. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

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accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cameron J. Allen whose telephone number is 571-2703164. The examiner can normally be reached on Mon-Fri 8-5 alternate Fri off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CJA


WALTER D. GRIFFIN
SUPERVISORY PATENT EXAMINER